

*File project 5028*

This document is part of an integrated file. If separated from the file it must be subjected to individual systematic review.

STAT



*see above  
2 Aug 1951*

PORTABLE GENERATORS

STAT

General Description

The following specifications cover portable gasoline driven power plants in the capacity range of 50 to 1500 watts.

Such equipment has a multitude of uses for field Teletype, radio sets, radio sonde, radio weather beams, illumination, airborne electronic equipment, parachute-dropped equipment and for other portable and portable mobile applications.

The total weight of the gasoline engine and generator, described later, is less than 8 to 10 pounds! The entire operating power plant may be held in your hand!

The nominal frequency range is 400 to 800 cycles which is generally used for field and air borne equipment. Obviously, this higher frequency range may be used to power nonrotating equipment such as radio sets, etc.

Not only is this power plant design of the highest efficiency, but the generated output is load sensitive. An electrical regulator is incorporated in the generator which controls the engine speed for constant voltage output. The regulation is instantaneous and positive.

Since power plants of this type are often used unattended and in remote locations without repair facilities, every feature has been incorporated to eliminate breakdown or maintenance. There are no brushes or commutators in the generator. The gas engine is a single sleeve valve -- no valves to cause trouble at high speed. There are less than eleven moving parts in the complete power plant. The equipment may be designed for 1000 to 2000 hour operation.

The following detailed specifications cover a typical power plant with a maximum power output of 150 watts:

*Engine Design*

SPECIFICATIONS - ENGINE

1. Single cylinder engine
2. Air cooled
3. 4-cycle
4. Single sleeve valve
5. Bore - 1 inch diameter
6. Stroke - .82 inch
7. Displacement - .644 cubic inches
8. Horsepower output (estimated)  
.40 brake horsepower
9. Operating RPM 6000 - 8000
10. Ball Bearings
11. Full pressure lubrication
12. Oil supply - wetsump or drysump  
crank case
13. Ignition - Battery floating on generator and model engine - spark or glow plug. Breaker points operating at one-half engine speed advance and retard automatically controlled by load.
14. Governor - load sensitive control through generator
15. Weight - 2 lbs. - estimated
16. Compression ratio - 7:1 to 9:1 as required
17. Number of moving parts - 10 approximate
18. Fabrication: Steel parts - crankshaft, piston pin, single sleeve valve, 2 gears, ball bearings, piston rings (if used) - cast iron. All other parts such as crank cases, piston, cylinder head, manifolds (intake and exhaust) covers, etc., are aluminum alloy which can be sandcast, die cast or permanent mold.
19. Dimensions: overall height - 6 inches (estimated)  
length - 6 inches (estimated)  
width - 3 inches (estimated)  
Less - any muffler

SPECIFICATIONS - GENERATOR

1. Modified inductor alternator
2. Voltage 115
3. Frequency 400 to 800 cycles  
single phase
4. Power output 150 watts , 2 HP
5. Regulation - load sensitive
6. Weight - 5 lbs.
7. Size - 4" Diameter, 2 1/2" long
8. No slip rings, commutator or brushes